exists between semiconductive devices 16 and apparatus 70, thereby allowing a user to test device 16 or otherwise engage in a variety of different functions

Thus, one method for testing semiconductive device comprises providing an interposer having substrate comprised of an electrically insulating, thermally conductive ceramic material, electrically coupling the interposed to a semiconductive device, electrically coupling the interposer to a testing apparatus such that the testing apparatus is electrically coupled to semiconductive device, and then actuating the testing apparatus to electrically communicate with the semiconductive device.

A variety of different semiconductive devices may be electrically coupled to the inventive interposer. Examples of such semiconductive devices include DRAMs, SRAMs, integrated circuit devices, and the like, each of which has electrical conductors thereon such as bumps, lead fingers, or other package connections. The semiconductive devices, however, may be either packaged or non-packaged.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed and desired to be secured by United States Letters Patent is:

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1. A system for electrically coupling a semiconductive device to an electrical apparatus, the system comprising:

an interposer, the interposer comprising:

a substrate comprised of an electrically insulating ceramic material; and

a plurality of electrical conductors on the substrate, each electrical conductor having a receiving end for connecting to a semiconductive device and a terminal end for connecting to an electrical apparatus, such that electrical circuitry within the semiconductive device is electrically coupled to the electrical apparatus when the semiconductive device is connected to said plurality of receiving ends of the electrical conductors and said plurality of terminal ends of the electrical conductors are connected to the electrical apparatus; and

a connector for holding the semiconductive device stationary relative to the interposer.

2. A system as recited in claim 1, wherein the connector connects the semiconductive device to the interposer such that a portion of the semiconductive device is exposed to the atmosphere to thereby dissipate heat to the atmosphere.

3. A system as recited in claim 1, wherein the connector removably connects the semiconductive device to the interposer.

4. A system as recited in claim 1, wherein the connector comprises a resilient biasing clip.

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5. A system as recited in claim 1, wherein the connector is composed of a metal material.

6. A system as recited in claim 1, wherein the connector comprises an adhesive.

7. A system as recited in claim 1, wherein at least one of said receiving ends projects from the substrate.

8. A system as recited in claim 1, wherein at least one of said receiving ends is disposed within a recess in the substrate.

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9. A system for testing a semiconductive device, the system comprising:

an electrical testing apparatus;

a semiconductive device having an electrical circuitry therein electrically connected to an electrical lead projecting therefrom;

an interposer, the interposer comprising:

a substrate comprised of an electrically insulating material selected from the group consisting of glass, alumina, glass ceramic, nonmetallic nitride, aluminum nitride, nonmetallic carbide, and mixtures and derivatives thereof; and

an electrical conductor on the substrate, the electrical conductor having a receiving end for connecting to the electrical lead of the semiconductive device and a terminal end for connecting to the electrical testing apparatus, whereby the semiconductive device is electrically coupled to the electrical testing apparatus when the electrical lead of the semiconductive device is in contact with the receiving end of the electrical conductor and the terminal end of the electrical conductor is in electrical communication with the electrical testing apparatus.

10. The system as defined in Claim 9, further comprising:

a connector for biasing the electrical lead of the semiconductive device towards and in contact with the receiving end of the electrical conductor, the connector being composed of copper and alloys thereof.

11. The system as defined in Claim 10, wherein the connector has a coating thereon composed of an electrically insulating material.

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12. A system as recited in claim 10, wherein the connector connects the semiconductive device to the interposer such that a portion of the semiconductive device is exposed to the atmosphere to thereby dissipate heat to the atmosphere

13. A system as recited in claim 10, wherein the connector removably connects the semiconductive device to the interposer.

14. A system as recited in claim 10, wherein the connector comprises a resilient biasing clip.

15. A system as recited in claim 10, wherein the connector is composed of a metal material.

16. A system as recited in claim 10, wherein the connector comprises an adhesive.

17. A system as recited in claim 9, wherein at least one of said receiving ends projects from the substrate.

18. A system as recited in claim 9, wherein at least one of said receiving ends is disposed within a recess in the substrate.

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19. A system for electrically coupling a semiconductive device to an electrical apparatus, the system comprising:

an interposer, the interposer comprising:

a substrate comprised of an electrically insulating, ceramic material; and

an electrical conductor on the substrate, the electrical conductor having a receiving end for connecting to the semiconductive device and a terminal end for connecting to the electrical apparatus; and

a connector for holding the semiconductive device stationary relative to the interposer.

20. The system as defined in claim 19, wherein the substrate comprises a substantially planar sheet.

21. The system as defined in claim 19, wherein the substrate comprises a substantially homogenous material.

22. The system as defined in claim 19, wherein the receiving end protrudes upwardly with respect to the substrate.

23. The system as defined in claim 19 wherein the receiving end is disposed within a recess in the substrate.

24. The system as defined in claim 19, wherein the substrate comprises a material selected from the group consisting of glass, alumina, glass ceramic, nonmetallic nitride, aluminum nitride, nonmetallic carbide, and mixtures and derivatives thereof.

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25. The system as defined in claim 19, wherein the substrate comprises boron nitride.

26. The system as defined in claim 19, wherein the interposer further comprises an electrically insulating layer on a portion of the conductor between the receiving end and the terminal end.

27. The system as defined in claim 26, wherein the electrically insulating layer comprises a thermally conductive material.

28. A system as recited in claim 19, wherein the connector connects the semiconductive device to the interposer such that a portion of the semiconductive device is exposed to the atmosphere to thereby dissipate heat to the atmosphere.

29. A system as recited in claim 19, wherein the connector removably connects the semiconductive device to the interposer.

30. A system as recited in claim 19, wherein the connector comprises a resilient biasing clip.

31. A system as recited in claim 19, wherein the connector is composed of a metal material.

32. A system as recited in claim 19, wherein the connector comprises an adhesive.

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33. A system as recited in claim 19, wherein at least one of said receiving ends projects from the substrate.

34. A system as recited in claim 19, wherein at least one of said receiving ends is disposed within a recess in the substrate.

35. A system for electrically coupling a semiconductive device to an electrical apparatus, the system comprising:

an interposer, the interposer comprising:

a substantially homogeneous, substantially planar sheet comprised of an electrically insulating, inorganic ceramic material; and

an electrical conductor on the sheet, the electrical conductor having a receiving end for connecting to a semiconductive device and a terminal end for connecting to an electrical apparatus, such that the semiconductive device is electrically coupled to the electrical apparatus when the semiconductive device is connected to the receiving end of the electrical conductor and the terminal end of the electrical conductor is connected to the electrical apparatus; and

a connector for holding the semiconductive device stationary relative to the interposer.

36. The system as recited in claim 35, wherein the substrate consists essentially of alumina.

37. The system as recited in claim 35, wherein the substrate consists essentially of a glass ceramic material.

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38. A system as recited in claim 35, wherein the connector connects the semiconductive device to the interposer such that a portion of the semiconductive device is exposed to the atmosphere to thereby dissipate heat to the atmosphere.

39. A system as recited in claim 35, wherein the connector performs a function selected from the group consisting of:

removably connects the semiconductive device to the interposer;

resiliently biases the semiconductive device to the interposer; and

adhesivively connects the semiconductive device to the interposer.

40. A system as recited in claim 35, wherein at least one of said receiving ends projects from the substrate.

41. A system as recited in claim 35, wherein at least one of said receiving ends is disposed within a recess in the substrate.

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42. A system for electrically coupling a semiconductive device to an electrical apparatus, the system comprising:

an interposer, the interposer comprising:

a substantially homogeneous, substantially planar sheet composed of an electrically insulating material selected from the group consisting of glass ceramics, devitrified ceramics, vitro ceramics, alumina, single oxide ceramics, and mixed oxide ceramics, and mixtures and derivatives thereof; and

an electrical conductor on the sheet, the electrical conductor having a receiving end for connecting to the semiconductive device and a terminal end for connecting to the electrical apparatus, such that the semiconductive device is electrically coupled to the electrical apparatus when the semiconductive device is connected to the receiving end of the electrical conductor and the terminal end of the electrical conductor is connected to the electrical apparatus

a connector for holding the semiconductive device stationary relative to the interposer.

43. A system as recited in claim 42, wherein the connector performs a function selected from the group consisting of:

removably connects the semiconductive device to the interposer;

resiliently biases the semiconductive device to the interposer; and

adhesivively connects the semiconductive device to the interposer.

44. A system as recited in claim 42, wherein at least one of said receiving ends projects from the substrate.

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45. A system as recited in claim 42, wherein at least one of said receiving ends is disposed within a recess in the substrate.

46. A system as recited in claim 42, wherein the connector connects the semiconductive device to the interposer such that a portion of the semiconductive device is exposed to the atmosphere to thereby dissipate heat to the atmosphere.

47. A system for electrically coupling a semiconductive device to an electrical apparatus, the system comprising:

an interposer, the interposer comprising:

a substantially homogeneous, substantially planar sheet composed of an electrically insulating material selected from the group consisting of alumina, alumina with silica, alumina with silicates, alumina with derivatives of silicates, and mixtures and derivatives thereof; and

an electrical conductor on the sheet, the electrical conductor having a receiving end for connecting to the semiconductive device and a terminal end for connecting to the electrical apparatus, such that the semiconductive device is electrically coupled to the electrical apparatus when the semiconductive device is connected to the receiving end of the electrical conductor and the terminal end of the electrical conductor is connected to the electrical apparatus

a connector for holding the semiconductive device stationary relative to the interposer.

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48. A system as recited in claim 47, wherein the connector performs a function selected from the group consisting of:

removably connects the semiconductive device to the interposer;

resiliently biases the semiconductive device to the interposer; and

adhesivively connects the semiconductive device to the interposer.

49. A system as recited in claim 47, wherein at least one of said receiving ends projects from the substrate.

50. A system as recited in claim 47, wherein at least one of said receiving ends is disposed within a recess in the substrate.

51. A system as recited in claim 47, wherein the connector connects the semiconductive device to the interposer such that a portion of the semiconductive device is exposed to the atmosphere to thereby dissipate heat to the atmosphere.

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52. A system for electrically coupling a semiconductive device to an electrical apparatus, the system comprising:

an interposer, the interposer comprising:

a substantially homogeneous, substantially planar sheet composed of an electrically insulating material selected from the group consisting of boron nitrides, aluminum nitrides, and mixtures and derivatives thereof; and

an electrical conductor on the sheet, the electrical conductor having a receiving end for connecting to a semiconductive device and a terminal end for connecting to an electrical apparatus, such that the semiconductive device is electrically coupled to the electrical apparatus when the semiconductive device is connected to the receiving end of the electrical conductor and the terminal end of the electrical conductor is connected to the electrical apparatus

a connector for holding the semiconductive device stationary relative to the interposer.

53. A system as recited in claim 52, wherein the connector performs a function selected from the group consisting of:

removably connects the semiconductive device to the interposer;

resiliently biases the semiconductive device to the interposer; and

adhesivively connects the semiconductive device to the interposer.

54. A system as recited in claim 52, wherein at least one of said receiving ends projects from the substrate.

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55. A system as recited in claim 52, wherein at least one of said receiving ends is disposed within a recess in the substrate.

56. A system as recited in claim 52, wherein the connector connects the semiconductive device to the interposer such that a portion of the semiconductive device is exposed to the atmosphere to thereby dissipate heat to the atmosphere.

57. A system for electrically coupling a semiconductive device to an electrical apparatus, the system comprising:

an interposer, the interposer comprising:

a substantially homogeneous, substantially planar sheet composed of an electrically insulating material selected from the group consisting of oxides of silicon, silicate glass, and nucleated, substantially crystalline glass, and mixtures and derivatives thereof; and

an electrical conductor on the sheet, the electrical conductor having a receiving end for connecting to the semiconductive device and a terminal end for connecting to the electrical apparatus, such that the semiconductive device is electrically coupled to the electrical apparatus when the semiconductive device is connected to the receiving end of the electrical conductor and the terminal end of the electrical conductor is connected to the electrical apparatus

a connector for holding the semiconductive device stationary relative to the interposer.

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58. A system as recited in claim 57, wherein the connector performs a function selected from the group consisting of:

removably connects the semiconductive device to the interposer;

resiliently biases the semiconductive device to the interposer; and

adhesivively connects the semiconductive device to the interposer.

59. A system as recited in claim 57, wherein at least one of said receiving ends projects from the substrate.

60. A system as recited in claim 57, wherein at least one of said receiving ends is disposed within a recess in the substrate.

61. A system as recited in claim 57, wherein the connector connects the semiconductive device to the interposer such that a portion of the semiconductive device is exposed to the atmosphere to thereby dissipate heat to the atmosphere.

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